

SOME ANATOMICAL POINTS CONNECTED WITH THE PERFORMANCE OF PROSTATECTOMY.¹

WITH REMARKS UPON THE OPERATIVE TREATMENT OF PROSTATIC
HYPERTROPHY.

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As an introduction to the present paper, I desire to pay a brief tribute to a distinguished member of the Medical Society of the State of New York, whose valuable contributions to the subject under discussion may be appropriately recalled.

I refer to Dr. Gouley, of New York, who occupies a peculiarly important position in the history of the evolution of the operative treatment of prostatic hypertrophy. Dr. Gouley was one of the only two surgeons to whom it may be said that we owe the transmission and the keeping alive of the operative treatment of this disease from the time at which its originator, the distinguished French surgeon Mercier, left the field, to that at which it entered upon its modern period, approximately the interval between 1865 and 1886, the other being Bottini. For the first ten years or so Dr. Gouley was the solitary one to observe in any systematic sense, and to appreciate the possibilities of, the operative treatment. The insistent advocacy of Bottini for the modification of Mercier's operation which he introduced did much to strengthen the position of Gouley, and though it was many years before either of their procedures received adherents, yet their service was not a slight one. But it is more especially to the particular

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contribution of Gouley that I wish to call attention; for, among the large number of those who have all at once in the course of the last few years so enthusiastically taken up prostatectomy, and especially perineal prostatectomy, few if any seem to be aware of the fact that perineal total prostatectomy was originally and definitely proposed by Gouley. This is, however, the fact, for he clearly describes that operation in a publication in 1873. The method has since been put forward by or attributed incorrectly to various surgeons in ignorance of this fact, just as we have seen, with less excuse, the same thing done with reference to certain of the old time classic perineal incisions which have been applied to the performance of prostatectomy, but which differ in nowise from the original form in which they were used for perineal lithotomy. I mean the inverted V and the inverted Y, which go back I do not know how far, but which were in common use in the middle of the last century, and the curved prerectal incision, so-called Zuckerkandl incision, which of course dates back 2000 years at any rate, it being the universally known incision of Celsus when cutting "on the gripe."

Gouley's operation is that of the rapid finger enucleation done through the sides of the prostatic urethra by the forefinger tip introduced into the latter through an ordinary external perineal urethrotomy incision. It is the operation which I have practised from time to time since 1889, having learned it from the verbal instructions of Dr. Gouley in 1884. It is the method which I still prefer. It is identical with the operation employed by Goodfellow, of San Francisco, who, not knowing Gouley's description, assumed it to be original with himself, and it is that practised by several others under a similar belief with regard to themselves. It emanates from Gouley, and I am glad to have the opportunity to say this, and to acknowledge, at the same time, my own sense of indebtedness to him for having originally directed my attention to the importance of the operative treatment and to its future possibilities.

In the remainder of this paper I would like to speak of

a few of the anatomical points which have a more especial bearing upon the performance of perineal prostatectomy.

Fig. 1 depicts a three-lobed hypertrophy of the prostate. The gland, together with its envelopes, has been cut away from the bladder, and its anterior commissure has been divided by an incision extending into the prostatic urethra in order to expose the interior of the latter throughout, and to give a view of the relations of the median and lateral enlargements to it. The points which are here demonstrable are as follows:

1. The completeness of the tumor formation in each of the three lobes, and the fact that they are definitely separable from the outer or fibrous sheath which encloses the gland.

2. The thickness of the outer sheath, which in some cases, as here, is conspicuous.

3. The well-marked interval or space (*f*) between the surface of the gland and the inner aspect of the outer sheath. It is in this space that all enucleations of the gland should be conducted. The above features are by no means always so clearly defined as they are in this specimen.

4. It also shows that the level of the lower border of the urethral aspect of each lateral lobe is a little above that of the floor of the prostatic urethra, consequently, also above the level of the ejaculatory ducts. Any operation, therefore, which does not involve injury to the floor of the prostatic urethra will not injure the ducts.

5. In this case the tumor formation of the middle lobe is, strictly speaking, outside the urethra and intravesical; it is therefore also outside the sphere occupied by the ducts, and its removal need not implicate the latter in its performance.

The enucleation without injury of the ducts is, theoretically at least, possible. How frequently it actually spares them, it is difficult to say. I shall show later that it is possible to preserve them when performing the operation according to the method of Gonley, contrary to what has been implied in a recent discussion, by Dr. Young, who characterized the rapid finger enucleation as a blind procedure done in the dark, and a rough tearing out of the gland which disregarded injury to

the ducts. In a specimen obtained from a fatal case, in which five days before death I had enucleated the prostate by the method of Gouley, and had not given any attention to the preservation of the ducts, and which I had the opportunity to examine thoroughly post-mortem, I discovered to my surprise the ejaculatory ducts quite intact except just at their point of emergence on the urethral floor, where the verumontanum had been injured, and with it just the terminal parts of the ducts (this is illustrated in Fig. 11).

That the ducts may be preserved in the performance of the finger enucleation is further evidenced by the statements of Goodfellow, who reports the occurrence of apparently natural ejaculation in a considerable number of the patients operated upon by him, and by similar assertions on the part of some of the English operators in connection with the suprapubic operation; the actual figures have not, so far as I am aware, been given with regard to this point, but the statements are sufficiently explicit to indicate that the criticism of Gouley's operation or the claim for the superiority of one or another special technique in this respect are not well grounded. Since I have referred to this matter, I would add that the criticism with regard to the blindness of procedure of finger enucleation does not seem to me to hold good as a general statement, at any rate. That it is true for individuals I readily agree, but for those of us who practise it, the sense of touch is more accurate, delicate, and a safer guide than that of sight in the performance of this operation. The ability to *see* the steps of the operation I have not yet been able to acquire in the few cases in which I have endeavored to follow Dr. Young's manner of operating, because of the presence of blood and the fact that I have not succeeded in bringing into view the upper and more distant aspects of the gland during the enucleation. This, however, I readily acknowledge is very likely owing to my lack of familiarity with the method, and to being obliged to wean myself from another method of operating with which I have been familiar for many years. What I wish especially to make clear is that far too much attention has been

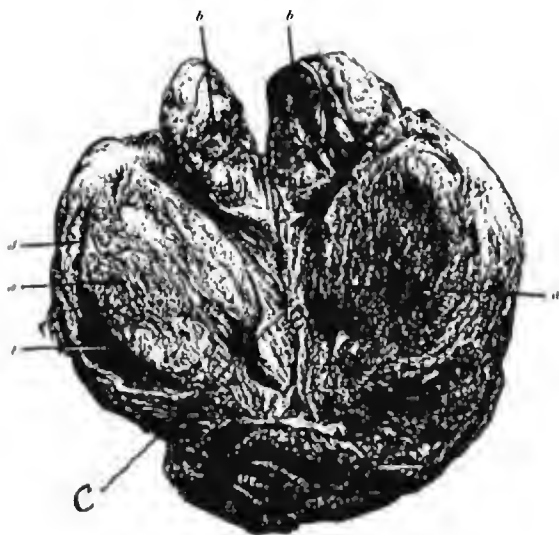


FIG. 1.—Three-lobed hypertrophy. The gland and its outer sheath have been cut away from the bladder above and the anterior urethra below. The gland has been divided longitudinally through its anterior commissure and spread open to expose the interior of the prostatic urethra. The middle lobe has been divided in the median line to its base.

(*a-a*) The two lateral lobes. (*b-b*) The two halves of the divided middle lobe. (*c*) The prostatic urethral floor. (*d*) Outer aspect of the external fibrous sheath. (*e*) Orifices of the ejaculatory ducts. (*f*) The space between the gland and its external fibrous sheath. (Watson.)

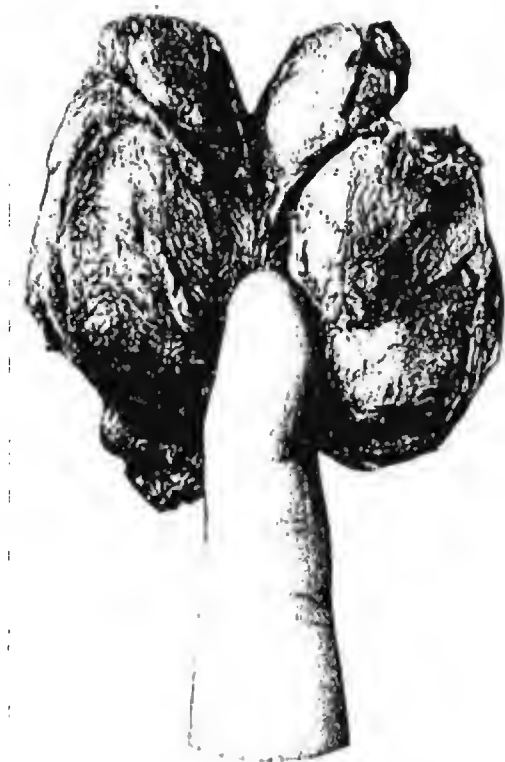


FIG. 2.—Finger enucleation in the manner proposed by Gouley. The enucleation, as the author usually begins it. Floor of prostatic urethra not injured necessarily. (Watson.)

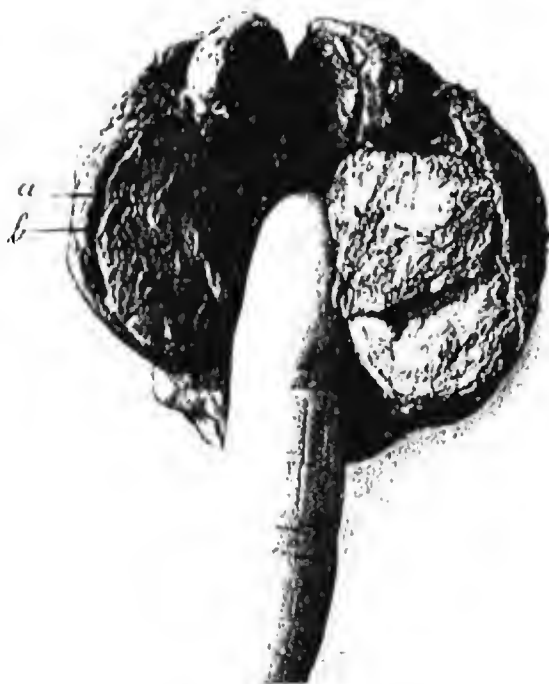


FIG. 3.—Emuclation a little further advanced. (Watson.)



FIG. 4.—(a) Embeccated left lobe. (c) Roof of the chamber turned back in order to expose the interior of the chamber from which the lobe (a) has been removed. (b) Interior of chamber formerly occupied by left lobe. This has no communication with the chambers of other lobes. (Watson.)

directed to the question of the merits of certain special techniques. *Many of them are excellent, and yield results so little different in character in any respect, that no important advantage can be claimed for one to the exclusion of the others. The really essential point for those who are experts in this special province is to bring home the fact to the profession at large that the operative treatment of prostatic hypertrophy has been brought to a sufficient degree of perfection to make it evident that the patients should be given the benefit of it, and should not be submitted to the dangers of catheterism as they have been in the past, until it is hopeless to interfere surgically in many instances.*

Fig. 2 shows the finger beginning the enucleation of one of the lateral lobes as I am accustomed to begin it when doing the enucleation after the manner of Gonley. It will be noticed that the floor of the prostatic urethra is not injured, but lies behind and beneath the finger and the lowest point of the urethral part of the enucleation.

In Fig. 3 the finger has entered the space between the surface of the gland and the inner aspect of the urethral side of the outer sheath. The pulp of the finger-tip is held upward, and the pressure which is exercised by it in making the enucleation, and while separating the posterior surface of the gland from the outer sheath, will be directed always upward and outward; when the front and upper surfaces of the lobe are being detached, the pressure is made laterally; *at no time should it be directed downward towards the rectum*, for the latter is very liable to be injured if this precaution be neglected, particularly if the operator has failed to place the tips of one or two fingers of the other hand in the rectum while making the enucleation.

In Fig. 4 one lateral lobe of the gland has been enucleated by the finger. This has been done in this instance by entering the fibrous sheath through the upper part of the side of the urethra, and that side of the urethra together with the urethral aspect of the fibrous capsule is turned back across the floor of the prostatic urethra in order to expose to view the interior of the chamber within which the lobe was formerly enclosed. It

will be seen that the inner wall of this chamber is elsewhere intact except at the part at which the finger broke through. Next it will be noticed that the outer side of this chamber is much thicker than its inner or urethral aspect. Again, it is to be noticed that the chamber and fibrous capsule which constitute its walls are wholly separate from the corresponding chambers of the other lateral and the middle lobes. Finally, as far as the gross appearances permit us to determine, the intravesical aspects of the gland are in this particular case obviously covered by the fibrous capsule as well as by the mucous membrane of the bladder, and not by the latter alone, as has been asserted to be invariably the case. It is in the outer, lateral, and anterior parts of the fibrous capsule that the extensive venous plexus runs, which fact makes it important not to wound that part of the capsule when removing the gland.

Fig. 5 shows in some respects quite the contrary conditions to those seen in the preceding figures. In this case there is an entire absence of the space between the gland and its outer fibrous sheath that was shown in the last figures. The contrary condition exists of an intimate and inseparable connection between the two. It is difficult to see any line of distinction between the gland tissue and the outer capsule.

The prostate has been cut almost, but not quite through, transversely not far from its vesical end, and the anterior half of it has been turned down and hangs by a thin strip of tissue to the posterior half, which is not separated at all from its natural connections from the bladder.

The point that I wish to emphasize in connection with this specimen is that when such a condition as that which is seen here is met with, the operator should not persist in the attempt to enucleate, for enucleation is impossible to effect properly or safely in such a case, because of the wounding of the outer capsule, which is practically inevitable under the circumstances, and the hæmorrhage which will result. Removal will be best accomplished by morcellment, and it is wise not to try to effect a complete removal, but to leave a thin layer of

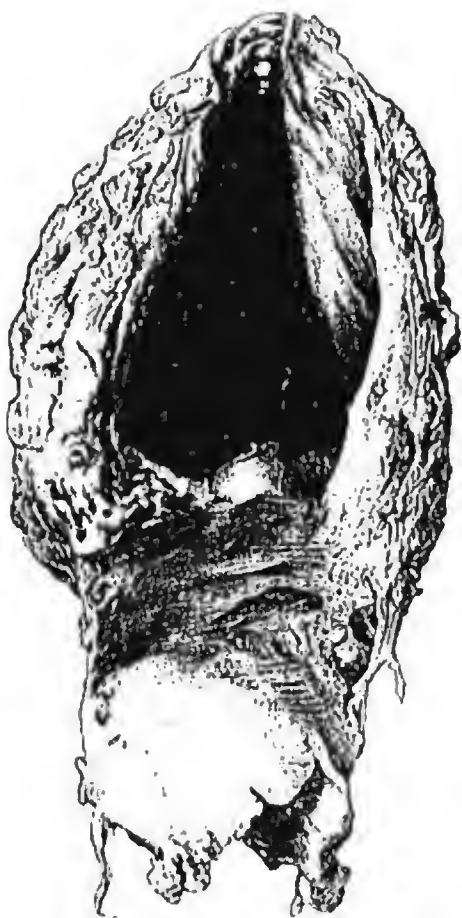


FIG. 5.—Specimen of the author's showing gland in which the attachments between the sheath and the surface of the gland are very intimate, and make the case one in which it is difficult or impossible to enucleate.



FIG. 6.—(a) Bit of the capsula vera turned back from the left lobe. (Watson.)



FIG. 7.—Two lateral lobes and prostatic urethra enucleated in 1897 in one mass by suprapubic prostatectomy. (Watson.)



FIG. 8.—(a) Two lateral lobes. (b) Median lobe removed by Gouley's perineal prostatectomy.
(Watson.)



FIG. 9.—(a) (b) and (c) Middle and two lateral lobes removed by Gouley's perineal prostatectomy. (Watson.)

the gland attached to the inner surface of the outer sheath instead.

Fig. 6. A small bit of the inner or true capsule has been turned back from the side of one of the lateral lobes in order to show how close the connection is between the gland and the capsula vera, and also how thin and delicate it is compared with the outer or fibrous sheath.

Owing to these two characteristics, enucleation cannot be properly carried out between the capsula vera and the gland surface; and if it is attempted, the operator will inevitably lose his way, and moreover will leave numerous bits of the gland attached to the inner surface of this thin capsule, and hence fail to make a complete enucleation.

Figs. 7, 8, and 9 show the gland after its enucleation in three different cases, in one, two, and three separate masses respectively. The first specimen represents a bilateral hypertrophy of the gland which I removed in one mass together with the prostatic urethra by the suprapubic route in 1897, or some three or four years before Mr. Freyer published what he has termed his "new operation," which is done in identically the same way as that which I pursued in the case from which this specimen was taken.

The fact that I removed the hypertrophied gland in one mass together with the prostatic urethra *did not strike me then, nor does it seem to me now, to constitute a "new" procedure* that could be considered as distinctive in any essential sense of the word from the original suprapubic prostatectomy of McGill. I refer to the point in order to recall the fact that the credit of suprapubic prostatectomy belongs to Belfield and McGill as certainly as it does not belong to Mr. Freyer, to whom we do owe, however, the fact that it has been revived in England, and shown to a greater advantage than has hitherto been done by any one, and where it remains the favorite and almost the exclusively practised method, the surgeons of that country never having given any serious attention to the perineal operation which is so widely but far from

exclusively practised here in America and, though more exclusively, also in France within the last few years.

The figures also show incidentally how cleanly the finger enucleation is often accomplished, the fact being evident from the smooth surfaces of the enucleated masses. The method employed was that of Gouley in the two perincal operations in which the lobes were removed each as a separate mass, and the method of McGill in the case of the single mass.

The specimen from which Fig. 10 was taken is that of a very extensive three-lobed hypertrophy in which the median lobe reaches high up into the bladder and constitutes a condition which, it must be said, is not a common one, in which the Bottini operation becomes so difficult to perform as to make it unwise to attempt it, or, as I personally believe, impossible to accomplish at all, and in which it is so obvious that the growth is within the sphere of a suprapubic prostatectomy that that operation is clearly the one that common sense dictates to be the best to apply in such a case. This I have shown in order once again to emphasize the desirability of not becoming so possessed by the partisan view in favor of one operative method alone as to lose the receptive and elastic qualities that are among the best that a surgeon can have. It is this view for which I contended at the outset many years ago, and have always held ever since, namely, that the choice of operative method was determined by the forms and size of the glandular enlargements, and by the direction which they took with reference to the interior of the bladder, which occasionally made the suprapubic operation that of choice.

Fig. 11 depicts a post-mortem specimen from a case in which the patient died on the fifth day after perincal prostatectomy done by the rapid perincal finger enucleation already described as that of Gouley. Death was due to uræmia in connection with a chronic interstitial nephritis. The specimen represents in its upper part the interior of that part of the bladder immediately surrounding the vesical orifice which lies in the figure above a horizontal line drawn between *a* and *a*. The rest of the specimen which lies below this line shows the

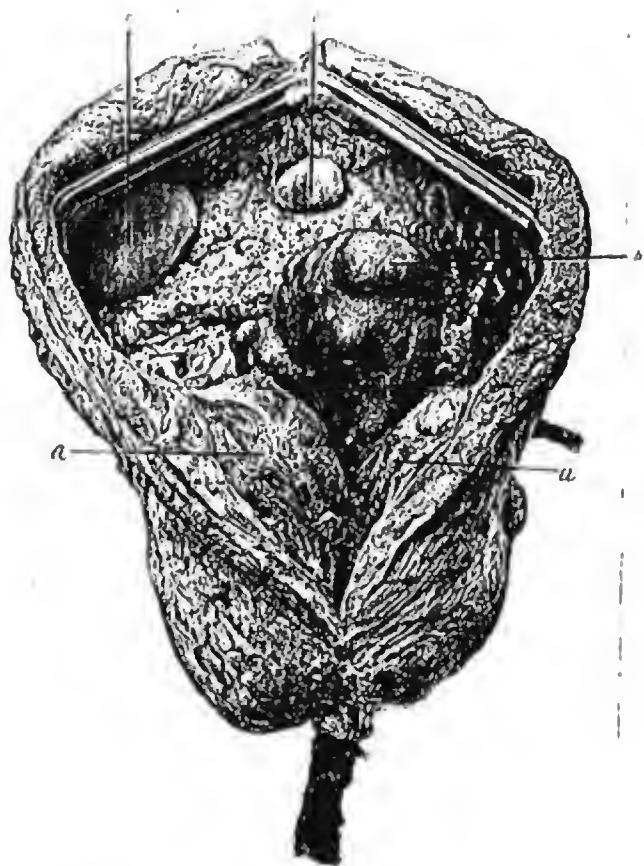


FIG. 10.—Bladder and part of prostatic urethra opened in front. (*a-a*) Extensive enlargement of the two lateral lobes. (*b*) Very large median hypertrophy. (*c-c*) Vesical calculi. (Watson.)



FIG. 11.—(a-a) Vesical orifice laid open by an incision through the middle line above. The space included in the limits designated by the letters a-a-b-b-a, is the inner surface of the bladder wall immediately surrounding the vesical outlet. The irregularly quadrilateral space included within the limits designated by the letters a-c-e-a, represents the inner surface of the fibrous sheath of the prostate and of the chambers formerly occupied by the lateral lobes. (d-d) The mouths of the ejaculatory ducts, a wire issuing from each. (e) Floor of prostatic urethra.

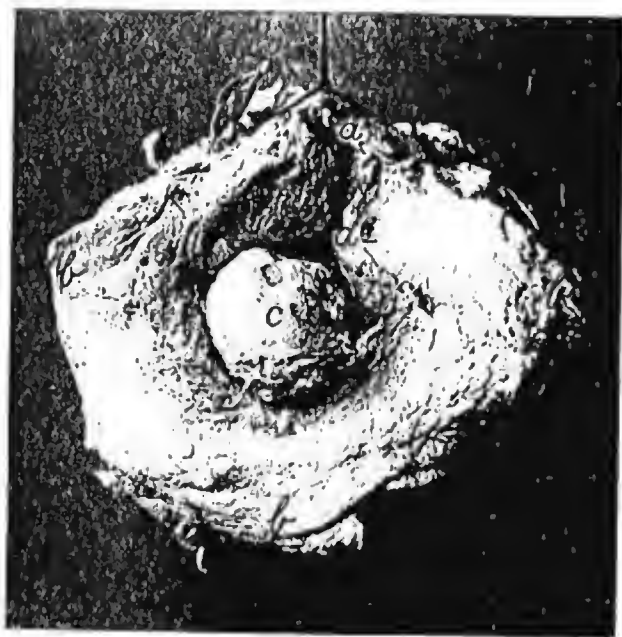


FIG. 12.—(a-a) Cut through vesical orifice closed again by suture. (b-b-b-b) Inner surface of bladder immediately surrounding the vesical outlet, the rest of the bladder having been cut away from it. (c) The middle lobe of the prostate projecting into the bladder from the prostatic urethra. (In this illustration the lateral lobes are concealed by the bladder wall, which intervenes to hide them from view.)



FIG. 13.—*a*, The vesical outlet after the removal of the prostate; *b, b, b, b*, inner surface of bladder wall surrounding it, which, it will be noted, is uninjured; *c, c*, seminal vesicles, vasa deferentia, etc.

space formerly occupied by the hypertrophied lateral lobes of the prostate, its presenting face being the inner aspect of the outer or fibrous sheath except along the middle line, about half-way upon which the two wires emerge which is the floor of the prostatic urethra. The vesical orifice and anterior surface of the outer sheath have been cut through longitudinally in the middle line, and the whole interior of the space formerly occupied by the gland and prostatic urethra have been exposed to view by drawing apart the edges of the divided tissues. In the middle of the specimen are seen two wires, one of which enters each of the ejaculatory ducts and traverses the whole of their lengths except a very small bit of them just behind and including their orifices, which were torn away in the course of the enucleation.

The particular feature which I wish to emphasize in connection with this specimen is that the ejaculatory ducts may be saved even when removing the gland by the finger enucleation carried out through the median perineal urethrotomy incision, and that, as I said in the earlier part of my remarks, the criticism directed against this operation because of the destruction of the ejaculatory ducts which it has been implied was necessarily involved in its performance is not sustained. I would add that there was no effort made especially to preserve the ducts when the operation was being done.

The other point to which I shall again refer is that the outer fibrous sheath and the bladder wall covering the intra-vesical parts of the enlarged gland are nowhere injured.

Figs. 12 and 13 present another view of the same specimen as the last one. The cut through the vesical orifice which was made in order to display the interior of the prostatic chamber in the last figure has been brought together again by suture, so that we are now looking directly down upon the inner surface of the part of the bladder which immediately surrounds the vesical outlet, the rest of the bladder having been cut away. In Fig. 12 the prostate has been replaced in its chamber, and the middle lobe is seen projecting from the vesical orifice

into the interior of the viscus in a manner similar to that which existed prior to operation.

Fig. 13 is the same, except for the fact that the gland has once more been withdrawn, and the condition presented is now that which actually existed after the operation. The only change or sign of disturbance of the natural structure of the bladder wall or outlet is that of a slight enlargement of the latter, which is little, if at all, greater than what is produced by the stretching of it due to the passage of the finger and the withdrawal of the middle lobe through it. (The masses which depend from the lower side of the specimen are the seminal vesicles and parts of the vasa deferentia. The bladder wall stands in front of and conceals from view the chamber from which the enlarged gland has been removed.) The point that is especially well shown in this figure is the absence of injury done by the operation to the bladder.

Figs. 14 and 15 present an unusual variety of a frequently seen condition of the bladder secondary to the enlargement of the gland, unusual in that instead of the trabeculation or single diverticula such as are commonly found, there is in this case a four-chambered diverticulum, the different compartments of which unite upon the inner surface of the bladder into one mouth, and they divide into four, one opening into each of the pouches. The individual spaces were completely shut off one from the other by well-marked septa which extended from the mucous membrane upon the surface to the further limit of the chambers. On the right upper side of the figure is the orifice of a single diverticulum which was also present, and was somewhat larger in its capacity than all four of the other chambers taken together.

Fig. 14 represents that part of the bladder which was cut away from the part immediately surrounding the vesical outlet shown in the two preceding figures; the front surface has been cut through longitudinally and we are looking into the interior of the organ. The diverticula in this case were at the summit of the organ.

Fig. 15 is the same specimen turned over so that its

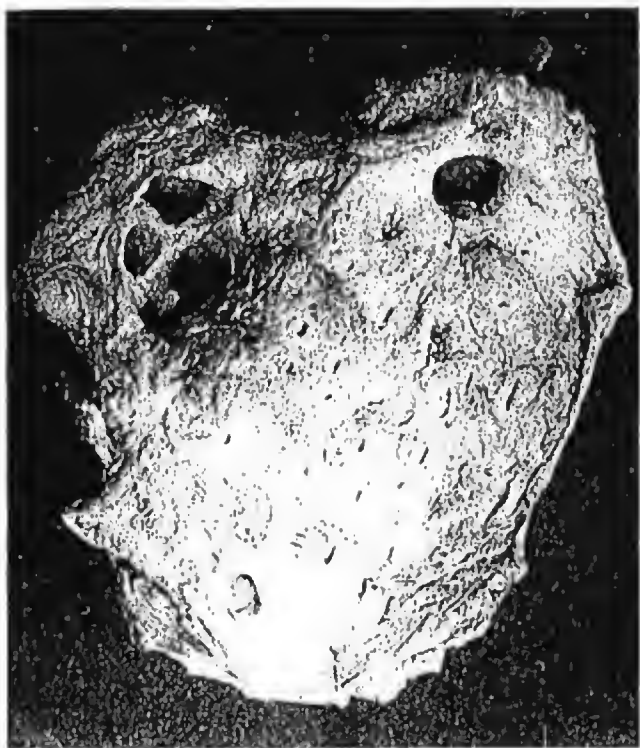


FIG. 14.—Inner surface of the bladder, showing the mouths of the diverticula opening into it.



FIG. 15.—Same specimen turned over to show the opposite side. The posterior aspect of the diverticula have been cut across in order to expose the interior of the chambers and to show the septa dividing those on the right

exterior or outer surface is shown. The chambers of the diverticula have been cut across in order to show their inner aspects and the septa which separate the individual cavities of the four compartments which are grouped together. None of the pouches contained calculi. The capacity of the pouches altogether, when they had lost the elasticity of the walls, and when they were not distended, was forty cubic centimetres. During life they would probably have contained not less than five ounces when distended.

My personal connection with this subject dates back seventeen years, at which time I published a monograph which embodied my beliefs with regard to the operative treatment of the hypertrophied prostate, from which publication I ask leave to quote a few of the more important conclusions, as follows:

1. *That the mortality attending the catheter treatment was even then greater, except in the class of people of the best social status, than that attending prostatectomy, and that the mortality of perineal prostatectomy, were it practised at a sufficiently early stage of the progress of the malady, would certainly prove to be far less than that associated with the catheter treatment, in all classes of persons.*

2. *That in the large majority of cases the prostate was readily accessible and easily to be removed through the perineum.*

3. *That in a minority of cases it was not thus accessible, but was readily so through the suprapubic route.*

4. *That the mortality of the perineal prostatectomy was less than that of the suprapubic operation; that the former therefore became, in all cases in which it was applicable, the operation of choice, and that the best way to determine whether any individual case was or was not suitable for the perineal operation was to make a digital exploration of the actual conditions present through the posterior urethra by means of an ordinary external perineal urethrotomy incision, as the first step of the operation. That at least twice out of three times the gland would be found to be readily removable by the*

perineal urethral incision, just mentioned, and that in the other third of the cases *the surgeon would proceed to go on to do a suprapubic operation at once*, the perineal urethrotomy exploratory incision not only not interfering with its performance, but, on the contrary, aiding in it, and also supplying additional drainage afterwards.

It will be seen therefore that my chief contribution to the subject of operative treatment was the demonstration of the fact that perineal prostatectomy through an ordinary external perineal urethrotomy incision was readily to be accomplished *in a large majority of cases, and that it was the operation of choice because of its lower mortality*, but not the exclusively to be adhered to operation, the suprapubic method having a very definite and distinctly advantageous place, which was, however, in a minority of the whole number. These opinions I have never seen reason to alter, and they are those which are to-day generally accepted.

I have been led to make this reference to my own share in the matter largely because of being the first advocate of perineal prostatectomy in the manner proposed by Gouley in this country.

These views were then, however, regarded as being so radical that they received little, if any, attention. It has taken a good many years for even the specialists to awake to their truth; but it is correspondingly satisfactory to have these statements that I have given above, and which were those which I urged seventeen years ago, finally receive such a wide endorsement as they have had in the course of the last three or four years, and especially to see perineal prostatectomy become so fully accepted as it has been in France and America, though under a multiplicity of what might almost in some instances be termed mannerisms rather than methods.

In conclusion, I would suggest that perhaps the most valuable contribution that could be made at the present time to the subject would be to have reported the cases treated by the catheter throughout, with special reference to the mortality and the time which elapsed between the beginning of

the catheter treatment and death in the cases in which death was obviously referable to the secondary results of prostatic hypertrophy, and the catheter treatment, or in which, at any rate, that treatment failed to avert the fatal termination, for in no other way, I think, will the conviction be so forcibly brought home to the profession at large of the dangers attending the catheter treatment or contrast them so strikingly with the benefits that the operative treatment is capable of offering, as might be done in this way, and the general practitioner be induced to transfer these cases at an early period of the malady to the surgeon for operation. What results may be looked for if this be done has been amply established by the brilliant series of operations reported by Goodfellow, Young, Albarran, and others.